

**U.S. Department of Education - EDCAPS
G5-Technical Review Form (New)**

Status: Submitted

Last Updated: 9/11/11 12:00 AM

Technical Review Coversheet

Applicant: New York Hall of Science (U411C110310)

Reader #2: *****

	Points Possible	Points Scored
Questions		
Summary Statement		
Summary Statement		
1. Summary Statement	0	
Sub Total	0	
Selection Criteria		
Need for Project		
1. Need for Project	35	35
Quality of Project Design		
1. Project Design	25	25
Quality of the Management Plan		
1. Quality of the Management	20	20
Sub Total	80	80
Priority Questions		
Competitive Preference Priority 6		
Competitive Preference Priority 6		
1. Competitive Preference 6	1	
Sub Total	1	
Competitive Preference Priority 7		
Competitive Preference Priority 7		
1. Competitive Preference 7	1	
Sub Total	1	
Competitive Preference Priority 8		
Competitive Preference Priority 8		
1. Competitive Preference Pr	1	
Sub Total	1	
Competitive Preference Priority 9		
Competitive Preference Priority 9		
1. Competitive Preference 9	1	
Sub Total	1	
Competitive Preference Priority 10		
Competitive Preference Priority 10		

1. Competitive Preference 10	1	1
Sub Total	1	1
Total	85	81

Technical Review Form

Panel #11 - 84.411C Panel - 11: 84.411C

Reader #2: *****

Applicant: New York Hall of Science (U411C110310)

Questions

Summary Statement - Summary Statement

1. Summary Statement (Optional)

General:

SciGames: a Technology-enhancement Model Bridging Informal and Formal Science Learning is an outstanding project proposal. The model is innovative for teaching and learning science concepts. This unique approach will definitely promote k-12 students' attitudes and enthusiasm in learning science concepts. The project concept is grounded on extensive research and empirical evidences. The project narrative is comprehensive in addressing each criterion required for the i3 grant initiative. This reader enjoyed reading the proposal immensely. The grant model can be replicated to teach all sciences.

Reader's Score:

Selection Criteria - Need for Project

1. The Secretary considers the need for the project. In determining the need for the project, the Secretary considers the following factors:

(1) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.

(2) The extent to which specific gaps or weaknesses in services, infrastructure, or opportunities have been identified and will be addressed by the proposed project, including the nature and magnitude of those gaps or weaknesses.

(3) The extent to which the eligible applicant demonstrates that, if funded, the proposed project likely will have a positive impact, as measured by the importance or magnitude of the effect, on improving student achievement or student growth, closing achievement gaps, decreasing dropout rates, increasing high school graduation rates, or increasing college enrollment and completion rates.

Strengths:

In addressing the Absolute Priority # 2, promoting STEM Education, The New York Hall of Science presents an outstanding proposal. One of its major strengths is its design, generated through collaborative efforts of an interdisciplinary team of learning scientists, museum educators, learning technologists, game designers, middle school science teachers, and evaluators.

The project effectively addresses the competitive priority 10, with its goal in increasing the number of individuals from groups traditionally underrepresented in STEM by providing them with access to rigorous and engaging coursework that will prepare them for college and/or careers in STEM (Pp.22-26). The applicant plans to accomplish this objective by developing, implementing, and evaluating a new system of technologies (Competitive Preference Priority 10), SciGames, designed to bridge formal classroom and informal playground science learning environments.

Citations of numerous research findings in education and other sectors, plus the empirical evidence provided through a pilot study provide strong theoretical support for this proposed strategy. Throughout the proposal applicant provided citations on how both affect and learning are important for students from groups

traditionally underrepresented in STEM. A detailed description of the pilot study and the findings supporting the positive impact on improving student science achievement and affect are presented on pages 25 through 28 of the project narrative.

The need for the project is well substantiated. The proposed project represents an innovative and exceptional approach to the absolute priority 2, and competitive priority 10 established for the project.

Weaknesses:

None noted.

Reader's Score: 35

Selection Criteria - Quality of Project Design

1. The Secretary considers the quality of the design to be conducted of the proposed project. In determining the quality of the project design, the Secretary considers the following factors:

(1) The extent to which the proposed project has a clear set of goals and an explicit strategy, with actions that are
(a) aligned with the priorities the eligible applicant is seeking to meet, and
(b) expected to result in achieving the goals, objectives, and outcomes of the proposed project.

(2) The eligible applicant's estimate of the cost of the proposed project, which includes the start up and operating costs per student per year (including indirect costs) for reaching the total number of students proposed to be served by the project. The eligible applicant must include an estimate of the costs for the eligible applicant or others (including other partners) to reach 100,000, 250,000, and 500,000 students.

Note: The Secretary considers cost estimates both

(a) to assess the reasonableness of the costs relative to the objectives, design, and potential significance for the total number of students to be served by the proposed project, which is determined by the eligible applicant, and
(b) to understand the possible costs for the eligible applicant or others (including other partners) to reach the scaling targets of 100,000, 250,000, and 500,000 students for Development grants. An eligible applicant is free to propose how many students it will serve under its project, and is expected to reach that number of students by the end of the grant period. The scaling targets, in contrast, are theoretical and allow peer reviewers to assess the cost-effectiveness generally of proposed projects, particularly in cases where initial investment may be required to support projects that operate at reduced cost in the future, whether implemented by the eligible applicant or any other entity. Grantees are not required to reach these numbers during the grant period.

(3) The extent to which the costs are reasonable in relation to the objectives, design, and potential significance of the proposed project.

(4) The potential and planning for the incorporation of project purposes, activities, or benefits into the ongoing work of the eligible applicant and any other partners at the end of the Development grant.

Strengths:

The project design is comprehensive. The project narrative on pages 8 through 13, includes a detailed description on strategies and activities involved in reaching the project goal and objectives. These objectives and strategies are all inclusive as they include instrument development, design cycles, pilot evaluation of SciGame elements, prototype field testing, teacher professional development, data analysis, science game redesign, development of portable Scigame kits, Implementation study, Impact study, including quasi- experimental design generating internal reports and articles. The chart with activities and timelines included

add clarity as well.

The ingenuity of developing and testing SciGames in teaching physics concepts, and the process of technology logs of physics data during students' playground gameplay, incorporation of data into a digital application to support deeper classroom inquiry into the core science concepts is extraordinary.

On page 17, the narrative presented on cost effectiveness and scaling of the project indicate how the cost is effective, and an investment in tripling the proportion of underrepresented minorities in science and engineering careers as is estimated to be necessary to meet the future needs of a globalized STEM-driven economy. The applicant plans to serve approximately 12,000 students and 80 teachers by the end of the project. In scaling up the SciGames, \$288/student is a reasonable cost given the potential of the proposed project to provide participating students a science learning experience that is both rigorous and engaging.

The potential and planning for the incorporation of project purposes, activities, or benefits into the ongoing work of the eligible applicant and any other partners at the end of the Development grant is high. The letters of support from project partners included in appendix G are quite impressive. In addition, NYCSI has an excellent track record - Over the last 20 years, NYSCI has trained more than 35,000 teachers in inquiry-based science teaching, emphasizing ongoing professional development. Professional development activities funded this grant will provide needed skills and knowledge.

Weaknesses:

Additional discussion on scaling up of the cost for the project could add clarity to this section. Points are not deducted.

Reader's Score: 25

Selection Criteria - Quality of the Management Plan

- 1. The Secretary considers the quality of the management plan and personnel for the proposed project. In determining the quality of the management plan and personnel for the proposed project, the Secretary considers the following factors:**

(1) The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks, as well as tasks related to the sustainability and scalability of the proposed project.

(2) The qualifications, including relevant training and experience, of the project director and key project personnel, especially in managing projects of the size and scope of the proposed project.

Strengths:

The management plan as described on pages 20-24, is excellent. An interdisciplinary team will manage the grant. They have expertise in science, science education, learning technologies, and game design. In addition, they have previous experience required to design, develop, build, and test this novel SciGames approach to STEM learning that bridges across informal and formal settings. The management plan details how the objectives of the project will be achieved as per the project timeline and within budget, overseeing the work of all subteams and project partners, and the advisory board.

The plan is comprehensive in achieving the objectives of the project on time and within budget. The plan includes clearly defined responsibilities, timelines, and milestones for accomplishing project tasks, as well as tasks related to the sustainability and scalability of the proposed project.

The PI of the project has a Ph.D. is the Director of the Center for Play, Science, and Technology Learning

(SciPlay) at the New York Hall of Science. The Co PI, also has a Ph.d, will serve as the President & CEO of the New York Hall of Science. The Co PI is widely recognized for her work using digital technologies to support children s learning in the STEM disciplines.

The narrative on the personnel section of the budget clearly describes personnel responsible for each task. The grant will employ a full time professional development specialist, and a research assistant, and a research fellow, both full time. On pages 8 through 13, as well as on pages 20-24, the applicant presented a clear elaboration of each task, including tasks related to the sustainability and scalability of the proposed project with timelines and milestones.

On page 20, of the narrative, the applicant effectively described how the project will be sustained, and the task related to scalability of the proposed project. By integrating SciGames into existing programmatic work of NYSCI and its partners, the applicant intends to bring the project work to a larger scale. This program will serve over 100,000 students each summer.

A major strength of this project is the educational qualifications; training and professional experiences of the project PI, key project personnel, and consultants. They have expertise in science, engineering, learning technologies, research, and game design. The applicant has an excellent track record of STEM learning and serving minority population in the area. All key personnel have significant experience in managing projects of the size and scope of the proposed project. A detailed description of qualifications and related experience of key personnel, project partners, consultants, and advisory board members are included in the project narrative (pages 20-24). Resumes of all key personnel are included in appendix F.

Weaknesses:

Not noted.

Reader's Score: 20

Priority Questions

Competitive Preference Priority 6 - Competitive Preference Priority 6

1. Competitive Preference Priority 6 - Innovations for Improving Early Learning Outcomes (zero or one point)

We give competitive preference to applications for projects that would implement innovative practices, strategies, or programs that are designed to improve educational outcomes for high-need students who are young children (birth through 3rd grade) by enhancing the quality of early learning programs. To meet this priority, applications must focus on

(a) improving young children's school readiness (including social, emotional, and cognitive readiness) so that children are prepared for success in core academic subjects (as defined in section 9101(11) of the ESEA);

(b) improving developmental milestones and standards and aligning them with appropriate outcome measures; and

(c) improving alignment, collaboration, and transitions between early learning programs that serve children from birth to age three, in preschools, and in kindergarten through third grade.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 7 - Competitive Preference Priority 7

1. Competitive Preference Priority 7 - Innovations that Support College Access and Success (zero or one point)

We give competitive preference to applications for projects that would implement innovative practices, strategies, or programs that are designed to enable kindergarten through grade 12 (K-12) students, particularly high school students, to successfully prepare for, enter, and graduate from a two- or four-year college. To meet this priority, applications must include practices, strategies, or programs for K-12 students that

(a) address students' preparedness and expectations related to college;

(b) help students understand issues of college affordability and the financial aid and college application processes; and

(c) provide support to students from peers and knowledgeable adults.

Strengths:

NA

Weaknesses:

Reader's Score:

Competitive Preference Priority 8 - Competitive Preference Priority 8

1. Competitive Preference Priority 8 - Innovations to Address the Unique Learning Needs of Students with Disabilities and Limited English Proficient Students (zero or one point)

We give competitive preference to applications for projects that would implement innovative practices, strategies, or programs that are designed to address the unique learning needs of students with disabilities, including those who are assessed based on alternate academic achievement standards, or the linguistic and academic needs of limited English proficient students. To meet this priority, applications must provide for the implementation of particular practices, strategies, or programs that are designed to improve academic outcomes, close achievement gaps, and increase college- and career-readiness, including increasing high school graduation rates (as defined in this notice), for students with disabilities or limited English proficient students.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 9 - Competitive Preference Priority 9

1. Competitive Preference Priority 9 - Improving Productivity (zero or one point)

We give competitive preference to applications for projects that are designed to significantly increase efficiency in the use of time, staff, money, or other resources while improving student learning or other educational outcomes (i.e., outcome per unit of resource). Such projects may include innovative and sustainable uses of technology, modification of school schedules and teacher compensation systems, use of open educational resources (as defined in this notice), or other strategies.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 10 - Competitive Preference Priority 10

1. Competitive Preference Priority 10 - Technology (zero or one point)

We give competitive preference to applications for projects that are designed to improve student achievement or teacher effectiveness through the use of high-quality digital tools or materials, which may include preparing teachers to use the technology to improve instruction, as well as developing, implementing, or evaluating digital tools or materials.

Strengths:

The project is designed to develop and test SciGames, a suite of technologies that turns students' playground play into a game. The game requires students to learn and use target physics concepts and the technology logs physics data during students' playground gameplay. Student data is incorporated into a digital app, which is designed to support deeper inquiry into the core science concepts back in the classroom. The applicant will develop and test three SciGames that address three core 8th grade physics concepts about force and motion. Implementation study will be conducted in Years 1 and 2 with 2,000 New York City students from groups underrepresented and their 30 teachers. In Years 3 and 4, the applicant plans to conduct an impact study with 6,000 students and 80 teachers.

Weaknesses:

Not noted.

Reader's Score: 1

Status: Submitted

Last Updated: 9/11/11 12:00 AM

Status: Submitted

Last Updated: 9/10/11 12:00 AM

Technical Review Coversheet

Applicant: New York Hall of Science (U411C110310)

Reader #1: *****

	Points Possible	Points Scored
Questions		
Summary Statement		
Summary Statement		
1. Summary Statement	0	0
Sub Total	0	0
Selection Criteria		
Need for Project		
1. Need for Project	35	35
Quality of Project Design		
1. Project Design	25	24
Quality of the Management Plan		
1. Quality of the Management	20	20
Sub Total	80	79
Priority Questions		
Competitive Preference Priority 6		
Competitive Preference Priority 6		
1. Competitive Preference 6	1	
Sub Total	1	
Competitive Preference Priority 7		
Competitive Preference Priority 7		
1. Competitive Preference 7	1	
Sub Total	1	
Competitive Preference Priority 8		
Competitive Preference Priority 8		
1. Competitive Preference Pr	1	
Sub Total	1	
Competitive Preference Priority 9		
Competitive Preference Priority 9		
1. Competitive Preference 9	1	
Sub Total	1	
Competitive Preference Priority 10		
Competitive Preference Priority 10		

1. Competitive Preference 10	1	1
Sub Total	1	1
Total	85	80

Technical Review Form

Panel #11 - 84.411C Panel - 11: 84.411C

Reader #1: *****

Applicant: New York Hall of Science (U411C110310)

Questions

Summary Statement - Summary Statement

1. Summary Statement (Optional)

General:

The application is well written and is clear in its theoretical framework and the partners is has in place for executing its goals. The management team is strong and has experience and prior funding and evidence to show that these efforts, if funded would add to the field of knowledge in the formal / informal space for STEM education.

Reader's Score: 0

Selection Criteria - Need for Project

1. The Secretary considers the need for the project. In determining the need for the project, the Secretary considers the following factors:

(1) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.

(2) The extent to which specific gaps or weaknesses in services, infrastructure, or opportunities have been identified and will be addressed by the proposed project, including the nature and magnitude of those gaps or weaknesses.

(3) The extent to which the eligible applicant demonstrates that, if funded, the proposed project likely will have a positive impact, as measured by the importance or magnitude of the effect, on improving student achievement or student growth, closing achievement gaps, decreasing dropout rates, increasing high school graduation rates, or increasing college enrollment and completion rates.

Strengths:

The applicant makes a strong case for the integration of the formal and informal science education space using literature from National Science Board, National Research Council (page 1-2). There is a strong balance of how students come to terms with their own science understanding as it relates to their conceptions and experiences with the world around them. The applicant provides a strong literature review of why combining elements from both informal and formal science learning environments to support student learning is of high leverage in increasing STEM education for this targeted population (page 4).

This work also builds on work that has already been piloted (page 5) so this additional funding can be used to improve and expand on the work to reach a greater number of students.

This work also brings in an important connection between the world of formal and informal science where the formal science space. Each of these environments can learn from each other and take advantage of the resources, knowledge, and talent that exists and collaborate toward a common goal.

Weaknesses:

none.

Reader's Score: 35

Selection Criteria - Quality of Project Design

1. The Secretary considers the quality of the design to be conducted of the proposed project. In determining the quality of the project design, the Secretary considers the following factors:

(1) The extent to which the proposed project has a clear set of goals and an explicit strategy, with actions that are
(a) aligned with the priorities the eligible applicant is seeking to meet, and
(b) expected to result in achieving the goals, objectives, and outcomes of the proposed project.

(2) The eligible applicant's estimate of the cost of the proposed project, which includes the start up and operating costs per student per year (including indirect costs) for reaching the total number of students proposed to be served by the project. The eligible applicant must include an estimate of the costs for the eligible applicant or others (including other partners) to reach 100,000, 250,000, and 500,000 students.

Note: The Secretary considers cost estimates both

(a) to assess the reasonableness of the costs relative to the objectives, design, and potential significance for the total number of students to be served by the proposed project, which is determined by the eligible applicant, and
(b) to understand the possible costs for the eligible applicant or others (including other partners) to reach the scaling targets of 100,000, 250,000, and 500,000 students for Development grants. An eligible applicant is free to propose how many students it will serve under its project, and is expected to reach that number of students by the end of the grant period. The scaling targets, in contrast, are theoretical and allow peer reviewers to assess the cost-effectiveness generally of proposed projects, particularly in cases where initial investment may be required to support projects that operate at reduced cost in the future, whether implemented by the eligible applicant or any other entity. Grantees are not required to reach these numbers during the grant period.

(3) The extent to which the costs are reasonable in relation to the objectives, design, and potential significance of the proposed project.

(4) The potential and planning for the incorporation of project purposes, activities, or benefits into the ongoing work of the eligible applicant and any other partners at the end of the Development grant.

Strengths:

The applicant has a clear, explicit, coherent strategic plan in working with the Department of Education, NYC Parks and Recreation Department, and the neighboring schools in its recruitment efforts so it identifies and targets the high need population. The process for the pilot, design, and field-testing of the tool and the work with teachers are clearly laid out and is supported by literature of teacher learning and science learning for teachers.

The design team is clearly identified and is a diverse group of participants that will provide strong input in the development and design process. The design and research questions are clearly laid out and the evidence collection for this work is reasonable. The design and pilot teachers are strategically chosen so that design teachers and field-testing teachers are working within the same school environment and can learn from each other (page 10).

The science content that this proposal addresses is aligned to the practices and recommendations found in the Science Framework that will be used to guide the Next Generation of Science Standards. The ideas in this middle school context can be potentially powerful in upper level science classes found in high school.

The work plan for the 5- year proposal and the rationale for the project timeline and milestones are clearly laid out on page 12. The roles and responsibilities of the teams are clearly laid out and leverage the expertise of the diverse group members.

Weaknesses:

It is unclear what the dosage of PD training will be for those field-testing the tools and practices in their classrooms. The proposal would be stronger if it specified the number of hours that is needed for the tool training and practice in the classroom. This gives the reader a sense of how the work could be scaled up in terms of number of hours needed (or necessary) for teacher training to the new technology and classroom practice. The proposal also isn't clear how it aims to interact with school leadership structures so that science teachers are explicitly supported in this new endeavor. Engagement and formal support from school leadership can help increase teacher engagement and participation in this work.

The cost of \$288 per student is a reasonable cost for the estimated student reach of the grant. It would be helpful to see what the estimates in both PD and technology maintenance costs would be to sustain this work at the current schools. It would also be helpful to see what the projected cost savings were in the sharing of tools and resources across school sites (page 13.)

Reader's Score: 24

Selection Criteria - Quality of the Management Plan

1. **The Secretary considers the quality of the management plan and personnel for the proposed project. In determining the quality of the management plan and personnel for the proposed project, the Secretary considers the following factors:**

(1) **The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks, as well as tasks related to the sustainability and scalability of the proposed project.**

(2) **The qualifications, including relevant training and experience, of the project director and key project personnel, especially in managing projects of the size and scope of the proposed project.**

Strengths:

The applicant has a diverse, interdisciplinary team that brings in strengths from each of their fields. This includes attention to design, engineering, practice, and the informal learning space that are all critical partners in this design and development effort. The PI and co-PI has had extensive experience managing this level of grant responsibilities and design, research, development and partnership work with schools and science teachers.

Weaknesses:

none

Reader's Score: 20

Priority Questions

Competitive Preference Priority 6 - Competitive Preference Priority 6

1. **Competitive Preference Priority 6 - Innovations for Improving Early Learning Outcomes (zero or one point)**

We give competitive preference to applications for projects that would implement innovative practices,

strategies, or programs that are designed to improve educational outcomes for high-need students who are young children (birth through 3rd grade) by enhancing the quality of early learning programs. To meet this priority, applications must focus on

(a) improving young children's school readiness (including social, emotional, and cognitive readiness) so that children are prepared for success in core academic subjects (as defined in section 9101(11) of the ESEA);

(b) improving developmental milestones and standards and aligning them with appropriate outcome measures; and

(c) improving alignment, collaboration, and transitions between early learning programs that serve children from birth to age three, in preschools, and in kindergarten through third grade.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 7 - Competitive Preference Priority 7

1. Competitive Preference Priority 7 - Innovations that Support College Access and Success (zero or one point)

We give competitive preference to applications for projects that would implement innovative practices, strategies, or programs that are designed to enable kindergarten through grade 12 (K-12) students, particularly high school students, to successfully prepare for, enter, and graduate from a two- or four-year college. To meet this priority, applications must include practices, strategies, or programs for K-12 students that

(a) address students' preparedness and expectations related to college;

(b) help students understand issues of college affordability and the financial aid and college application processes; and

(c) provide support to students from peers and knowledgeable adults.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 8 - Competitive Preference Priority 8

1. Competitive Preference Priority 8 - Innovations to Address the Unique Learning Needs of Students with Disabilities and Limited English Proficient Students (zero or one point)

We give competitive preference to applications for projects that would implement innovative practices, strategies, or programs that are designed to address the unique learning needs of students with disabilities, including those who are assessed based on alternate academic achievement standards, or the linguistic and academic needs of limited English proficient students. To meet this priority, applications must provide for the implementation of particular practices, strategies, or programs that are designed to improve academic outcomes, close achievement gaps, and increase college- and career-readiness, including increasing high school graduation rates (as defined in this notice), for students with disabilities or limited English proficient students.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 9 - Competitive Preference Priority 9

1. Competitive Preference Priority 9 - Improving Productivity (zero or one point)

We give competitive preference to applications for projects that are designed to significantly increase efficiency in the use of time, staff, money, or other resources while improving student learning or other educational outcomes (i.e., outcome per unit of resource). Such projects may include innovative and sustainable uses of technology, modification of school schedules and teacher compensation systems, use of open educational resources (as defined in this notice), or other strategies.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 10 - Competitive Preference Priority 10

1. Competitive Preference Priority 10 - Technology (zero or one point)

We give competitive preference to applications for projects that are designed to improve student achievement or teacher effectiveness through the use of high-quality digital tools or materials, which may include preparing teachers to use the technology to improve instruction, as well as developing, implementing, or evaluating digital tools or materials.

Strengths:

The applicant provides clear examples and case studies of sensors and digital input devices on playground equipment that loops back to ways students and teachers can analyze the data in the classrooms. The technology connects the informal learning environment to the classroom environment so that teachers and students can take advantage of the playtime and learn aspects of the science.

Weaknesses:

none.

Reader's Score: 1

Status: Submitted

Last Updated: 9/10/11 12:00 AM

Status: Submitted

Last Updated: 9/12/11 12:00 AM

Technical Review Coversheet

Applicant: New York Hall of Science (U411C110310)

Reader #3: *****

	Points Possible	Points Scored
Questions		
Summary Statement		
Summary Statement		
1. Summary Statement	0	
Sub Total	0	
Selection Criteria		
Need for Project		
1. Need for Project	35	32
Quality of Project Design		
1. Project Design	25	24
Quality of the Management Plan		
1. Quality of the Management	20	19
Sub Total	80	75
Priority Questions		
Competitive Preference Priority 6		
Competitive Preference Priority 6		
1. Competitive Preference 6	1	
Sub Total	1	
Competitive Preference Priority 7		
Competitive Preference Priority 7		
1. Competitive Preference 7	1	
Sub Total	1	
Competitive Preference Priority 8		
Competitive Preference Priority 8		
1. Competitive Preference Pr	1	
Sub Total	1	
Competitive Preference Priority 9		
Competitive Preference Priority 9		
1. Competitive Preference 9	1	
Sub Total	1	
Competitive Preference Priority 10		
Competitive Preference Priority 10		

1. Competitive Preference 10	1	1
Sub Total	1	1
Total	85	76

Technical Review Form

Panel #11 - 84.411C Panel - 11: 84.411C

Reader #3: *****

Applicant: New York Hall of Science (U411C110310)

Questions

Summary Statement - Summary Statement

1. Summary Statement (Optional)

General:

Reader's Score:

Selection Criteria - Need for Project

1. The Secretary considers the need for the project. In determining the need for the project, the Secretary considers the following factors:

(1) The extent to which the proposed project represents an exceptional approach to the priority or priorities established for the competition.

(2) The extent to which specific gaps or weaknesses in services, infrastructure, or opportunities have been identified and will be addressed by the proposed project, including the nature and magnitude of those gaps or weaknesses.

(3) The extent to which the eligible applicant demonstrates that, if funded, the proposed project likely will have a positive impact, as measured by the importance or magnitude of the effect, on improving student achievement or student growth, closing achievement gaps, decreasing dropout rates, increasing high school graduation rates, or increasing college enrollment and completion rates.

Strengths:

Increasing number of individuals from underrepresented groups for STEM by way of integration of inquiry based learning with informal science learning (e.g., game play) is a strong point of this proposal

The proposal identifies the limitations of inquiry based approaches, and recognizes the potential benefits of this approach. This is strength, because it acknowledges the reality of inquiry based instructional approaches and proposes to further create new knowledge for this dimension.

Weaknesses:

There is little evidence or theoretical basis that the integration of informal learning contexts with inquiry-based approaches shows promise for increasing the number of individuals from groups traditionally underrepresented in STEM. For instance, the origins and roots of the problem could be further described in terms of program needs.

Reader's Score: 32

Selection Criteria - Quality of Project Design

1. The Secretary considers the quality of the design to be conducted of the proposed project. In determining the quality of the project design, the Secretary considers the following factors:

(1) The extent to which the proposed project has a clear set of goals and an explicit strategy, with actions that are
(a) aligned with the priorities the eligible applicant is seeking to meet, and
(b) expected to result in achieving the goals, objectives, and outcomes of the proposed project.

(2) The eligible applicant's estimate of the cost of the proposed project, which includes the start up and operating costs per student per year (including indirect costs) for reaching the total number of students proposed to be served by the project. The eligible applicant must include an estimate of the costs for the eligible applicant or others (including other partners) to reach 100,000, 250,000, and 500,000 students.

Note: The Secretary considers cost estimates both

(a) to assess the reasonableness of the costs relative to the objectives, design, and potential significance for the total number of students to be served by the proposed project, which is determined by the eligible applicant, and
(b) to understand the possible costs for the eligible applicant or others (including other partners) to reach the scaling targets of 100,000, 250,000, and 500,000 students for Development grants. An eligible applicant is free to propose how many students it will serve under its project, and is expected to reach that number of students by the end of the grant period. The scaling targets, in contrast, are theoretical and allow peer reviewers to assess the cost-effectiveness generally of proposed projects, particularly in cases where initial investment may be required to support projects that operate at reduced cost in the future, whether implemented by the eligible applicant or any other entity. Grantees are not required to reach these numbers during the grant period.

(3) The extent to which the costs are reasonable in relation to the objectives, design, and potential significance of the proposed project.

(4) The potential and planning for the incorporation of project purposes, activities, or benefits into the ongoing work of the eligible applicant and any other partners at the end of the Development grant.

Strengths:

1. The project goals are consistent with identified needs.
2. The project goals are researchable and measurable.
3. The existing prototype implementation and field testing is a major strength of this project.
4. The way in which the project is designed for scale-up is impressive and represents a major strength of the project.

Weaknesses:

This game design process described in the proposal does not fully address the ways in which student needs will be identified in terms of existing root causes for underrepresentation in stem fields. For instance, a major goal of the project is to improve the number of underrepresented groups that enter the STEM field. The design should include a needs assessment and further research into how game methods might be utilized to meet the needs of the underrepresented groups. Games and informal science learning is posited to improve learning for all students, yet it is not clear what the advantage of this approach will specifically be for underrepresented groups.

Reader's Score: 24

Selection Criteria - Quality of the Management Plan

1. The Secretary considers the quality of the management plan and personnel for the proposed project. In determining the quality of the management plan and personnel for the proposed project, the Secretary considers the following factors:

(1) The adequacy of the management plan to achieve the objectives of the proposed project on time and within budget, including clearly defined responsibilities, timelines, and milestones for accomplishing project tasks, as well as tasks related to the sustainability and scalability of the proposed project.

(2) The qualifications, including relevant training and experience, of the project director and key project personnel, especially in managing projects of the size and scope of the proposed project.

Strengths:

The quality of the management team is superb. The partners and team members have extensive experience and expertise in the area of game design and development as it relates to STEM curricula.

The probability of project success is high. The scope, schedule, and threats to success have been fully developed and explained.

Weaknesses:

It is not clear how project management team will deal with off-site management challenges like distance between partners. The proposal would be strengthened if there were a statement of how team will be integrated to support program goals.

Reader's Score: 19

Priority Questions

Competitive Preference Priority 6 - Competitive Preference Priority 6

1. Competitive Preference Priority 6 - Innovations for Improving Early Learning Outcomes (zero or one point)

We give competitive preference to applications for projects that would implement innovative practices, strategies, or programs that are designed to improve educational outcomes for high-need students who are young children (birth through 3rd grade) by enhancing the quality of early learning programs. To meet this priority, applications must focus on

(a) improving young children's school readiness (including social, emotional, and cognitive readiness) so that children are prepared for success in core academic subjects (as defined in section 9101(11) of the ESEA);

(b) improving developmental milestones and standards and aligning them with appropriate outcome measures; and

(c) improving alignment, collaboration, and transitions between early learning programs that serve children from birth to age three, in preschools, and in kindergarten through third grade.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 7 - Competitive Preference Priority 7

1. Competitive Preference Priority 7 - Innovations that Support College Access and Success (zero or one point)

We give competitive preference to applications for projects that would implement innovative practices, strategies, or programs that are designed to enable kindergarten through grade 12 (K-12) students, particularly high school students, to successfully prepare for, enter, and graduate from a two- or four-year college. To meet this priority, applications must include practices, strategies, or programs for K-12 students that

(a) address students' preparedness and expectations related to college;

(b) help students understand issues of college affordability and the financial aid and college application processes; and

(c) provide support to students from peers and knowledgeable adults.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 8 - Competitive Preference Priority 8

1. Competitive Preference Priority 8 - Innovations to Address the Unique Learning Needs of Students with Disabilities and Limited English Proficient Students (zero or one point)

We give competitive preference to applications for projects that would implement innovative practices, strategies, or programs that are designed to address the unique learning needs of students with disabilities, including those who are assessed based on alternate academic achievement standards, or the linguistic and academic needs of limited English proficient students. To meet this priority, applications must provide for the implementation of particular practices, strategies, or programs that are designed to improve academic outcomes, close achievement gaps, and increase college- and career-readiness, including increasing high school graduation rates (as defined in this notice), for students with disabilities or limited English proficient students.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 9 - Competitive Preference Priority 9

1. Competitive Preference Priority 9 - Improving Productivity (zero or one point)

We give competitive preference to applications for projects that are designed to significantly increase efficiency in the use of time, staff, money, or other resources while improving student learning or other educational outcomes (i.e., outcome per unit of resource). Such projects may include innovative and sustainable uses of technology, modification of school schedules and teacher compensation systems, use of open educational resources (as defined in this notice), or other strategies.

Strengths:

Weaknesses:

Reader's Score:

Competitive Preference Priority 10 - Competitive Preference Priority 10

1. Competitive Preference Priority 10 - Technology (zero or one point)

We give competitive preference to applications for projects that are designed to improve student achievement or teacher effectiveness through the use of high-quality digital tools or materials, which may include preparing teachers to use the technology to improve instruction, as well as developing, implementing, or evaluating digital tools or materials.

Strengths:

This proposal meets competitive preference priority for technology in several ways. First the innovative aspect of the technologies proposed is a strength. Second, the way in which the technologies are to be integrated into STEM and informal learning contexts is notable.

Weaknesses:

Reader's Score: 1

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